this application. In the interim, Applicant wishes to retain those claims in this application in order to maintain co-pendency.

THE OFFICE ACTION

In the Official Action dated July 12, 2001, the Examiner rejected independent claims 1 and 3 as being obvious under 35 U.S.C. §103 over the following respective references:

a. Claim 1 — Japanese Patent No. 7118592, in view of either Babler (U.S. Patent 5,554,217), Sullivan (U.S. Patent 5,753,371) or Yolles (U.S. Patent 3,053,683); and

b. Claims 1 and 3 — Kubota et al. (U.S. Patent 6,039,796), in view of Babler (U.S. Patent 6,063,182), or Yolles (U.S. Patent 3,053,683);

THE CLAIMED INVENTION

The present invention relates to an aqueous glittering ball-point pen ink composition that provides a glittering feeling to an observer of the writing from the pen containing this composition i.e., the marking clearly glitters. The ball-point pen inks of the present invention provide a writing that has an intense glittering appearance to the observer with a 3-dimensional, or spatial effect, when viewed. These inks are explicitly ball-point pen inks, that is, they are inks that are delivered through the agency of a ball rotating in a tip body to form a writing on a substrate. Therefore, a ball point ink should be an ink that is capable of:

1. making the ball rotate smoothly without inhibiting its rotation;

2. passing through the clearance between the ball and the interior surfaces of the tip body;

3. being dispensed with the rotation of the ball;

4. fixed onto a substrate, such as a sheet of paper, by the rotation of the ball moving across the substrate surface.

Applicants have discovered that these properties can not only be provided by the ball-point pen of the present invention, but that the ink can provide a unique intense glittering feeling and three-dimensional effect.

(Claims 24, 30, 33 and 35 have been amended to correct an error in the units of measure of viscosity.)

RESPONSE TO THE REJECTIONS

The Rejection of Claim 1 Alone.

Primary Reference

1. **Japanese Patent Publication No. 07118592[1]**

This publication discloses a water-based ink with metallic[2] luster for ball-point pens that comprises:

a. at least a pearlescent pigment.

b. a water-soluble thickening resin.

c. a solvent, and

[1] Enclosed as Appendix A is an informal English language translation of Japanese Examined Patent Publication No. 07118592.

[2] The significant differences between metallic luster and pearlescent pigments on the one hand and those of the present invention on the other hand were discussed at length at pages 4 *et seq* in the previous Applicants' Response.

d. water

wherein the ink has a specified viscosity.

This citation relates to a water-based ink with metallic luster for ball-point pens. Applicant's inks are materially different from those inks providing a metallic luster, as do the references cited by the Examiner. This citation does not address itself to a ball-point pen ink that provides a glittering feeling and a spatial effect. The secondary references do not remedy this deficiency.

Secondary References

1. **U.S.Patent No. 5,554,217 – ("Babler I")**

Babler I discloses a method of coloring a high-molecular-weight organic material by dispersing an organic stir-in pigment in the high-molecular-weight organic material. The stir-in pigment composition contains an organic pigment and an inorganic filler pigment. (Column 1, lines 8-10 and Column 2, lines 21-25).

Specifically,

> The expression "inorganic filler pigment" means a substantially transparent or semitransparent inorganic pigment. For example, mica, kaolin, talc and natural or synthetic silicas, e.g., glass, are well-known inorganic filler pigments that are suitable for use in the pigment compositions of the present invention. (Column 4, lines 15-20).

Babler I is irrelevant to the claimed invention in two respects. First, the inorganic filler pigment is a glass (rather than glass flake coated with a metal as recited in the claims here.)

Second, there is no motivation to resort to the selection of a stir-in pigment that is intended to be dispersed in a high-molecular-weight organic material. Hence, one of ordinary skill would not be motivated to look to stir-in pigments and, even if so, would not find a glass flake coated with a metal that produced a glittering feeling and a spatial effect as in the present invention.

2. **U.S. Patent No. 5,753,371 ("Sullivan")**

Sullivan discloses a pearlescent pigment that is formed by establishing a hydrous layer of titanium and/or iron oxides on glass flakes and calcining the coated flakes. (Column 2, lines 22-25.)

As previously stated in Applicants' Response to Official Action dated July 12, 2001, there are significant and substantive differences between pearlescent pigments and the glass flakes coated with a metal in the ink of the claimed invention here in terms of the desired result of a glittering feeling and a spatial effect.

3. **U.S. Patent No. 3,053,683 – ("Yolles")**

Yolles teaches nothing about the conditions met by a ball-point pen ink as it is delivered from a ball-point pen onto a substrate to provide an acceptable written mark.

The disclosed composition of Yolles

> "has as its primary object the provision of new and useful shiny pigments of improved brilliance which are suitable for use in making glittery-finishes and which have improved resistance to tarnishing, corroding, gassing and/or dulling". (Column 1, lines 24-28).

It is made:

> "by dispersing a thus-prepared shiny pigment in a film-forming material, optionally in the presence or absence of conventional components of coating compositions."
> (Column 1, lines 42-45)

When one examines the Yolles composition and the disclosed modes of application of that composition, there is no disclosure, suggestion or motivation of a ball-point pen ink. The conditions that are met by inks of the present intention in moving through a ball point pen are considerably different from those that the Yolles compositions would encounter as they were used in the Yolles disclosure.

When the median diameter of the metal-coated glass flake pigments used in the present invention exceeds 100 μm, it is difficult for a ball-point pen ink using those metal-coated glass flake pigments to come out of a penpoint tip when used. (See specification, p. 4, lines 12-14.) Attached as Exhibit B is an illustrative drawing (Figs. 1 & 2) of the tip portion of a typical, or exemplary ball-point pen.

As shown in Figs. 1 and 2, a ball 1 is kept in position in the ball chamber 3 in the tip body 2 at the distal end of a typical ball-point pen. The writing ball is kept on seats 4 that project from the four directions of the internal wall of tip body 2 toward the center, the center being opening 5.

Between each of the seats (4a and 4b, 4b and 4c, 4c and 4d, and 4d and 4a) that project from four directions, grooves 6a, 6b, 6c, and 6d are formed, respectively (Fig. 2.). Since a ball-point pen typically has this structure, an ink that is stored in an ink reservoir (not shown) in the tip region of a ball-point pen flows in the direction shown by the arrows in Fig. 1 and flows out through a clearance that is between writing ball 1 and edge portion 21 of the tip body 2 (Fig. 1).

Therefore, when the median diameter of metal-coated glass flake pigments contained in an ink exceeds 100 μm, it is difficult for the ink to pass through between writing ball 1 and tip body 2, particularly difficult for an ink to pass through the clearance. There is also the effect of the seats and grooves. This deteriorates the fluidity of the ink. Also, the ink is likely to clog

depending on the metal coated glass flake pigments. Then writing performance deteriorates. Therefore, the restriction on the median diameter of metal coated glass flake pigments in the ball-point pen ink of the present invention is a restriction peculiar to an ink for ball-point pens. Also, the environment that an ink of the present invention encounters is distinctively different from those the Yolles compositions encounter.

An ink for ball-point pen is an ink that is applied to a ball-point pen, for example, having the above-mentioned structure. As previously stated, the ink must be:

1. an ink that makes the rotation of the writing ball smooth without inhibiting the rotation of the ball;

2. an ink that is capable of passing through the clearance between the ball and the internal wall and other structures of the tip;

3. an ink that is capable of delivering out an ink with the rotation of the writing ball; and

4. an ink that is fixed onto a sheet of paper by the rotation of the writing ball moving across the paper surface.

Further, these requirements should be achieved in an aqueous ink that comprises metal-coated glass flake, i.e, an ink comprising water. In short, the aqueous ink of the present invention that comprises metal-coated glass flakes should be a composition that comprises water and that is determined in relation to meeting the requirements imposed by the ball and the internal structure of the pen tip surrounding the ball.

In the ink composition of the present invention, water-soluble organic solvent is included in order to (1) prevent the penpoint tip from drying and (2) maintain the fluidity of the aqueous ink of the present invention (which includes metal coated glass flake pigment.) Also, in the ink

composition of the present invention, a water-soluble resin is included in order to prevent the metal coated glass flake pigment from settling in the aqueous ink and to maintain the dispersal stability in the aqueous system, thereby maintaining good fluidity and writing performance of the ball-point pen. On the other hand, the composition of Yolles does not teach one to include these components in relationship to a metal coated glass flake pigment.

Examples 10 through 15 of Yolles describe uses for the pigments, as follows:

> [Example 10]
> A film of the resulting composition is applied to a panel of black glass by means of a 10 mil doctor blade. (Column 4, lines 13 & 14).
>
> [Example 11]
> A knit cotton fabric calender-coated on one side in a conventional manner with the pigmented upholstery-quality polyvinyl chloride composition disclosed in Example IV of U.S. 2,801,949 is used as the substrate. The above-described topcoat composition is applied by means of a doctor-roller to the coated side of the coated fabric in sufficient amount to yield a dry coating weight of 0.7 ounce per sq. yd. (Column 4, lines 43-50).
>
> [Example 12]
> A film of this composition, diluted with water to about 150% of its original volume and filtered, is applied to a panel of black glass by means of a 5.6 mil doctor blade. (Column 5, lines 4-6).
>
> [Example 13]
> A coat of the thinned lacquer is sprayed on a steel automobile body panel which has previously been coated with a green acrylic automotive lacquer. (Column 5, lines 38-40).
>
> [Example 14]
> A coat of the thinned lacquer is sprayed on a primed steel panel and dried in a 65°C oven. (Column 5, lines 66-68).

[Example 15]

A coat of the ball-milled paste is spread on the aluminum base and fired in a 980°F furnace containing an argon atmosphere. (Column 6, lines 18-20).

[Other Examples]

Finer or coarser particles can be used according to the texture of glitter desired in the ultimate use. For example, particles as coarse as 50 mesh provide shiny products that can be sprinkled on a wet adhesive to make greeting cards and decorative articles. Particles so fine that substantially all pass through a 400 mesh screen can be used for fine textured glitter. (Column 6, lines 46-56.)

In addition, Yolles discloses additional modes of use for the disclosed compositions as follows:

> The coating compositions of this invention are useful for providing a glittery finish on articles made from a wide variety of substrates, including metal, wood, paper, fabric, plastic, rubber, plaster, cement, asphalt, glass and ceramics. Typical uses for these new glittery finishes are enriching the appearance of coated products, enhancing the attention-drawing power of signs and displays, and making high-visibility highway markings and other safety devices.
>
> The shiny pigments of this invention, besides being useful in glittery finishes, are also useful as decorative pigments in or on plastic castings and moldings, and in or on other products now employing such known garnishing pigments as pearl essence and metal flakes. (Column 8, lines 12-25.)

Since a composition of Yolles is a coating composition, as seen from examining the Examples, it is not truly a water system but a solvent system and is based on the premise that a great amount of the film-forming resin (a varnish component which is the main component of a coating) should be included which requires baking or drying for a relativley long time after coating. Therefore, the functional components of the Yolles composition are vastly different from those of a ball-point pen ink. (Although Example 12 of Yolles is an emulsion composition

of a water-based dispersion system, it requires air drying for 10 minutes and baking for 2 hours at 65°C after coating – conditions that are clearly not suitable for a ball-point pen ink for handwriting. Therefore, the Example 12-type composition could not be a composition intended for writing.)

Yolles discloses a coating method (in which compressed air is sprayed on a coated surface), as in Examples 13 and 14; a doctor blade method (in which varnish, or film forming resin is shed on a glass panel followed by uniformly mixing with a doctor blade which is attached keeping a constant distance from a glass surface, thereby obtaining a coated film with a certain thickness) as in Examples 10 and 12; a roller method (in which a coating composition is put on a roller surface or passed through the rollers, thereby obtaining a coated film) as in Example 11; a spreading method (in which a coating composition is spread for firing) as in Example 15 and a sprinkling on wet adhesive method as in the example of column 6, lines 46-56. However, these methods are not methods of forming a handwriting by directly making a fluid composition flow over the to-be-marked substrate, but they are the methods of sprinkling with a spray, mixing uniformly by a doctor blade, transcribing after putting on a roller surface, or spreading, etc. Further, there is no suggestion of the mechanism of a ball-point pen in which ink stored in an ink reservoir is delivered by using a rotating ball. In other words, Yolles does not at all teach (1) an ink composition that can pass through the tip structure of a ball-point pen as mentioned above, or (2) have dispersal stability or fluidity of an ink comprising metal coated glass flake in the sense that it can be used as a handwriting tool. Yolles does not teach the flowing mechanism of the ink in a ball-point pen provided by a ball rotating on a substrate such as a paper surface, either. Therefore, Yolles discloses nothing about the components or properties that a ball-point pen requires of an ink composition it dispenses.

The ball-point pen ink of the present invention relates to a ball-point pen ink that can form a glittering and uniform handwriting right after writing. Such a ball-point pen or a ball-point pen ink is unique, novel, unobvious and remarkable. The ink composition of the present invention is not only unique as an ink for a ball-point pen, but is a product in a field, -- hand-writing inks -- that is remarkably different from that of a mere coating composition.

One of ordinary skill in the art would not be motivated to look to the Yolles disclosure in formulating a ball-point pen ink because:

1. The disclosed modes of application disclosed by Yolles, *inter alia*,
   a. application to glass by means of a doctor blade,
   b. application to coated fabric by doctor-roller,
   c. application to steel panels by spraying,
   d. application to an aluminum base by spreading and firing, and
   e. application to wet adhesive by sprinkling; and
2. The primary object of the Yolles pigment, i.e., improved resistance to tarnishing, corroding, gassing and/or dulling, has no bearing on ball-point pen inks, especially the ball-point pen inks of the present invention.

are significantly different from those encountered by a ball-point pen ink.

The Yolles compositions, which are drawn from a non-analogous art, are used under very different conditions and are compositionally different. A fair reading of Yolles proves that it does not disclose, suggest or motivate the ball-point pen ink of the present invention, in any combination with Japanese Patent Publication No. 07118592 or Kubota et al. as primary references.

The Rejection of Claims 1 and 3

Primary Reference

1. **U.S. Patent No. 6,039,796 (Kubota et al.)**

Kubota et al relates to an ink jet recording method, and more particularly to:

> "an ink jet recording method wherein a reaction solution and an ink composition are deposited onto a recording medium to conduct printing. [It]... also relates to an ink composition suitable for use in the ink jet recording method."

The disclosed ink composition comprises:

> "at least a colorant,
> an inorganic oxide colloid,
> an alkali metal hydroxide, and
> an aqueous solvent."

But, the ink composition is used in an ink jet recording method that comprises the step of printing a reaction solution and an ink composition on a recording medium. (Column 7, lines 34-36). Hence, the ink composition of Kubota et al. is intended for ink jet recording in conjunction with a reaction solution. That is, there is a necessary interaction between the ink composition and a reaction solution. See Column 7, line 48 to Column 8, line 19.

Clearly, Kubota et al. represents unrelated art in at least the following two respects:

1. the disclosed ink composition is used in an ink jet recording method; and,

2. the disclosed ink composition is to be used in conjunction with a reaction solution to produce an image.

Secondary References

1. **U.S. Patent No. 6,063,182 ("Babler II")**

Babler II discloses a stir-in pigment composition for coloring high-molecular-weight material. Abstract; column 1, lines 11-16; and column 3, lines 27-29. The stir-in pigment composition comprises from 85 to 99.5 parts of pigment.

The remarks previously made regarding Babler I also apply to Babler II.

2. **U.S. Patent No. 3,053,683 ("Yolles")**

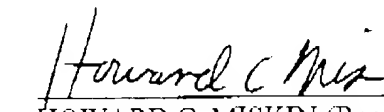
The remarks previously made with respect to the asserted combination of Japanese Patent Publication No. 07118592 with Yolles apply to this rejection asserting combination with Kubota et al. as well.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that pending independent claims 1 and 3, their dependent claims, and claims 22-35 are in condition for allowance and such action is requested.

Dated: March 15, 2002

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Twice Amended.) An aqueous glittering [writing] ball-point pen ink composition comprising

c. a glass flake pigment,

d. a water-soluble resin,

c. a water-soluble organic solvent, and

d. water

as essential ingredients,

said glass flake pigment being glass flake coated with a metal, and said glass flake pigment having a median diameter of about 5 to about 100 μm.

3. (Twice Amended.). An aqueous glittering [writing] ball-point pen ink composition comprising

a. a glass flake pigment,

b. a water-soluble resin,

c. a water-soluble organic solvent,

d. water, and

e. a colorant

as essential ingredients,

said glass flake pigment being glass flake coated with a metal, and said glass flake pigment having a median diameter of about 5 to about 100 μm.

24. (Amended.) A writing tool as set forth in claim 22, wherein the viscosity of ink measured by an ELD-type viscometer (3° R14 corn; rotation speed: 0.5 rpm; 20°C) is 1000 to 10000 [rpm] mPa•s.

30. A writing tool as set forth in claim 29, wherein said water-soluble resin is a water-soluble thickening resin and the viscosity of aqueous glittering ink measured by an ELD-type viscometer (3° R14 corn; rotation speed: 0.5 rpm; 20°C) is 1000 to 10000 [rpm] mPa•s.

33. (Amended.) A method of claim 32, wherein the viscosity of aqueous glittering ink measured by an ELD-type viscometer (3° R14 corn; rotation speed: 0.5 rpm; 20°C) is 1000 to 10000 [rpm] mPa•s.

35. (Amended.) A method of claim 34, wherein the viscosity of aqueous glittering ink measured by an ELD-type viscometer (3° R14 corn; rotation speed: 0.5 rpm; 20°C) is 1000 to 10000 [rpm] mPa•s.